

## APPENDIX F

# TRAINING AIDS AND DEVICES

*Training aids and devices must be included in a marksmanship program. This appendix lists those that units can make from materials most units have on-hand.*

### F-1. TRAINING DEVICES AND EXERCISES

The marksmanship training devices in this appendix are available to aid in sustainment training when used with the appropriate training strategies. These devices are beneficial when ammunition is limited for training or practice. Some training devices are complex and costly, but others are relatively simple and cheap to make. Devices and aids can be used alone or in combination. Individuals or squads can sustain or practice basic marksmanship skills and fundamentals with devices and aids.

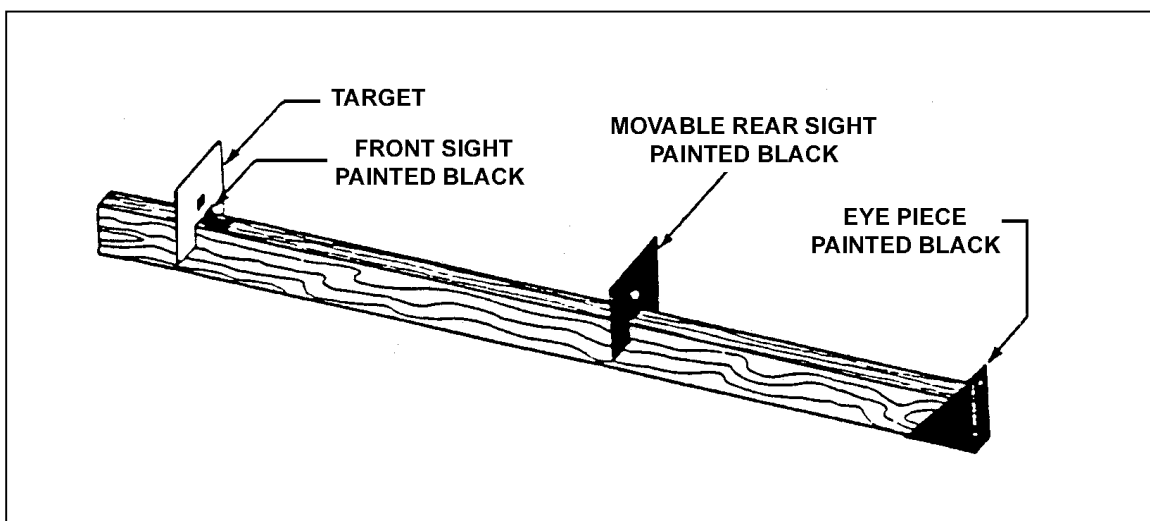
### F-2. FIRST SIGHTING AND AIMING EXERCISE

The purpose of the first sighting and aiming exercise is to teach the correct alignment of the sights on a target.

#### a. Equipment Needed:

One—sighting bar complete for each machine gun crew.

One—sighting target that measures 1 inch X 2 inches X 48 inches long. The sighting target is secured 5 1/2 inches away from one end (it should be moveable). The eyepiece is secured on the other end. The peep sight is secured 20 1/2 inches from the sighting target and 22 inches from the eyepiece (Figure F-1).



**Figure F-1. Sighting bar.**

b. **Conduct.** The instructor shows a sighting bar to the machine gun crews, points out its parts, and explains its use as follows:

(1) The sighting bar is used to assist in detecting small errors and in explaining them to the crews undergoing instruction.

(2) The front and rear sights on the sighting bar represent enlarged machine gun sights.

(3) The gunner looks through the eyepiece in such a position that he sees the sights in exactly the same alignment as the instructor does. Although there is no eyepiece on the machine gun, the use of an eyepiece on the sighting bar assists the gunners in learning how to align the sights properly when using the machine gun.

(4) The attachment of the removable target to the end of the sighting bar provides a simple method of readily aligning the sights on the target.

(5) Using a blackboard or a chart, the instructor explains and illustrates the correct sight alignment.

(6) A gunner from each crew adjusts the sights of the sighting bar and movable target to correctly align the sights on the target.

### F-3. SECOND SIGHTING AND AIMING EXERCISE

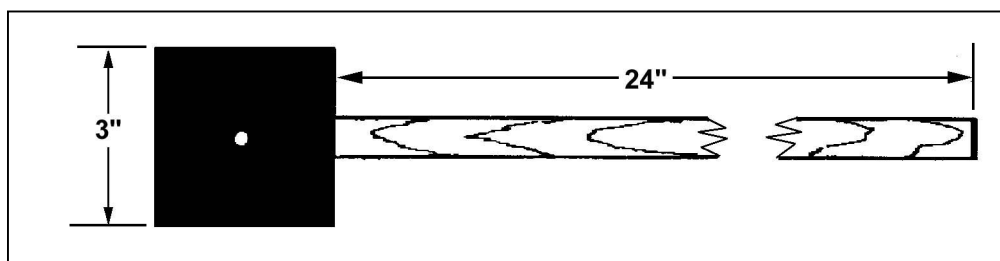
The purpose of the second sighting and aiming exercise is to apply the preceding lesson to actual alignment of the machine gun sights on a target 25 meters away.

#### a. Equipment Needed:

One—Machine gun.

One—Basic machine gun target placed 25 meters away, with the reverse (blank) side showing.

One—Sighting target, 24 inches long 1 inch X 1 inch, a 3-inch square piece of wood painted black with a small 1/4-inch hole in the center (Figure F-2).



**Figure F-2. Sighting target.**

b. **Conduct.** The instructor takes a normal position behind the machine gun, keeping his body and hands clear of the gun so that the eye is in the correct position for aiming.

(1) The gunner takes a position near enough to observe the instructor.

(2) The assistant gunner stands near the instructor to transmit signals to the ammunition bearer.

(3) The ammunition bearer is provided with the 3-inch sighting target and is posted as the marker at the blank target, which is 25 meters away from the gun.

(4) The instructor, through improvising signals transmitted through the signalman, directs the marker to move the sighting target until it correctly aligns with the sights, and then commands: HOLD.

(5) The marker complies, holding the sighting target in place on the blank target. The gunner and assistant gunner then look through the sights.

(6) The instructor explains that, in aiming, the gunner's eye should first focus on the target, to ensure that he is aiming at the proper target. His eye then focuses on the top of

the front sight, to ensure that the line-of-sight established passes through the center of the peep sight and over the top of the center of the front sight.

(7) After the gunner and assistant gunner look through the sight, the instructor directs the marker (ammunition bearer) to move the sighting target out of alignment. He then requires the gunner to direct the marker to move the sighting target until it is in correct alignment with the sights.

(8) The instructor checks the alignment made by the gunner and points out any errors. When the instructor believes the gunner is proficient, the assistant gunner begins his exercise.

#### **F-4. THIRD SIGHTING AND AIMING EXERCISE**

The purpose of the third sighting and aiming exercise is to show the importance of uniform and correct aiming and to instill in the gunners a sense of exactness. This exercise can be used to check the consistency of the aiming and placement of a three-round shot group in a dry-fire environment.

**a. Equipment Needed:**

One—Machine gun.

One—Basic machine gun target placed at a distance of 25 meters away with the reverse (blank) side showing.

One—Sighting target (24 inches long 1 inch X 1 inch, a 3-inch square piece of wood painted black and a small 1/4-inch hole in the center) (Figure F-2).

**b. Conduct.** The instructor takes a normal position behind the machine gun, keeping his body and hands clear of the gun so that the eye is in the correct position for aiming.

(1) The gunner takes a position near the instructor to observe.

(2) The assistant gunner stands near the instructor to transmit signals to the ammunition bearer.

(3) The ammunition bearer is provided with a 3-inch sighting target and is posted as the marker at the blank target, which is 25 meters away from the gun.

(4) The instructor, improvising signals, transmits through the signaller to direct the marker to move the sighting target until it is in correct alignment with the sights and then commands: MARK.

(5) The marker complies, holding the sighting target in place on the blank target. The marker marks the position by inserting the tip of a pencil through the 1/4-inch hole in the center of the target. The marker marks the first dot with a number 1, second with a 2 and the third with a 3, ensuring the marker moves the target after every mark. All three dots should fit inside a 4-cm circle.

(6) The instructor explains that, in aiming, the gunner's eye should first be focused on the target to ascertain that he is aiming at the proper target. His eye is then focused on the top of the front sight to ensure the line of sighting established is a line through the center of the peep sight and over the top of the center of the front sight.

(7) The gunner and assistant gunner, without touching the gun, repeat the operation until three dots have been made and numbered.

(8) The instructor now explains the errors noted in the three sight alignments and the probable shape of the shot group formed by joining the three dots. Repeat as many times as needed until the gunner and assistant gunner can put seven rounds inside a 4-cm circle. The grader marks the first dot with a number 1, the second with a number 2 and the third

with a number 3. He makes sure the grader moves the target after every mark. When the instructor believes the gunner is proficient, the assistant gunner begins his exercise.

(9) The marker traces the three dots on a sheet of paper and connects them with lines. He writes the gunner's name at the bottom of the sheet and gives the paper to the squad leader.

#### F-5. MACHINE GUN T&E MANIPULATION DRILLS

The purpose of these exercises is to teach and instill confidence in the gunner in properly using his T&E. These exercises are conducted on a 25-meter line.

##### a. Equipment Needed:

One—Machine gun.

One—4-foot X 8-foot sheet of plywood. Paint the plywood white with black ruled lines of 1/8-inch width horizontally and vertically. The horizontal lines are 2 inches apart, starting 1 inch from the top and the bottom. The vertical lines are 3 inches apart, with 1 inch on either side.

(1) Label the horizontal lines starting from the top with 1, 3 and so on skipping every other line. Label the vertical lines along the middle horizontal line starting at the left; for example, A, B, C and so on (Figure F-3).

(2) When using the night vision sight, cut out a 4-cm-square circle from every four squares across and down. The squares or circles can be cut in any order the unit leader desires.

(3) Set up the machine 25 meters away from the target. Center the machine gun on the target.

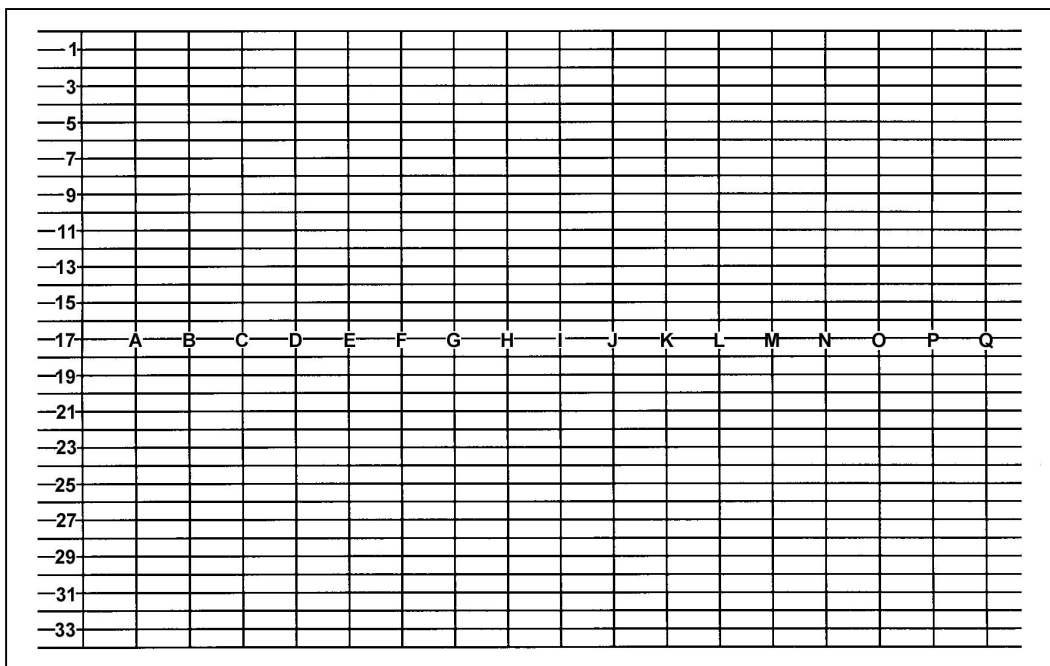


Figure F-3. Manipulator for T&E drills.

**b. Conduct.**

(1) The gunner is given the command to aim at vertical line B and horizontal line 4. The next command is RIGHT 150 mils; ADD 50 mils. The instructor then asks the gunner where he is aiming.

(2) Lay on the horizontal line 15 and vertical line O. The next command is, LEFT 100 mils; ADD 10 mils. The instructor then asks the gunner where he is aiming now.

(3) The leader or instructor can have as many of these types of questions set up, until he feels the gunner is proficient at this task.

## **F-6. TRAVERSE AND SEARCH EXERCISE**

The purpose of the traverse and search exercise is to teach the gunner how to aim and point on a silhouette target and maintain that aim while the target is moving.

**a. Equipment Needed:**

One—Machine gun.

One—Basic machine gun target placed at a distance of 25 meters away with the reverse (blank) side showing.

One—Marking silhouette measures 1 inch X 1/2 inch X 22 inches long (wood).

One—F-type silhouette (reduced by half its size) measuring 7 1/2 inches long X 3 3/4 high (Chapter 4).

**b. Conduct.** The instructor shows the target to the machine gun crews. He points out its parts and explains its use as follows:

(1) The gunner takes a normal position behind the machine gun. The gunner is required to aim at a prescribed point on the silhouette target and to maintain that aim during the uniform movement of the target.

(2) The assistant gunner takes a normal position next to the gunner. The assistant gunner assists the gunner in maintaining the point of aim.

(3) The ammunition bearer is located 25 meters away behind the basic machine gun target with the target. The bearer moves the target back and fourth, up and down in any direction he wants. The movement should be consistent and not uniform, so that the gunner and assistant gunner can get proper training. The speed that the ammunition bearer moves depends on the instructor.

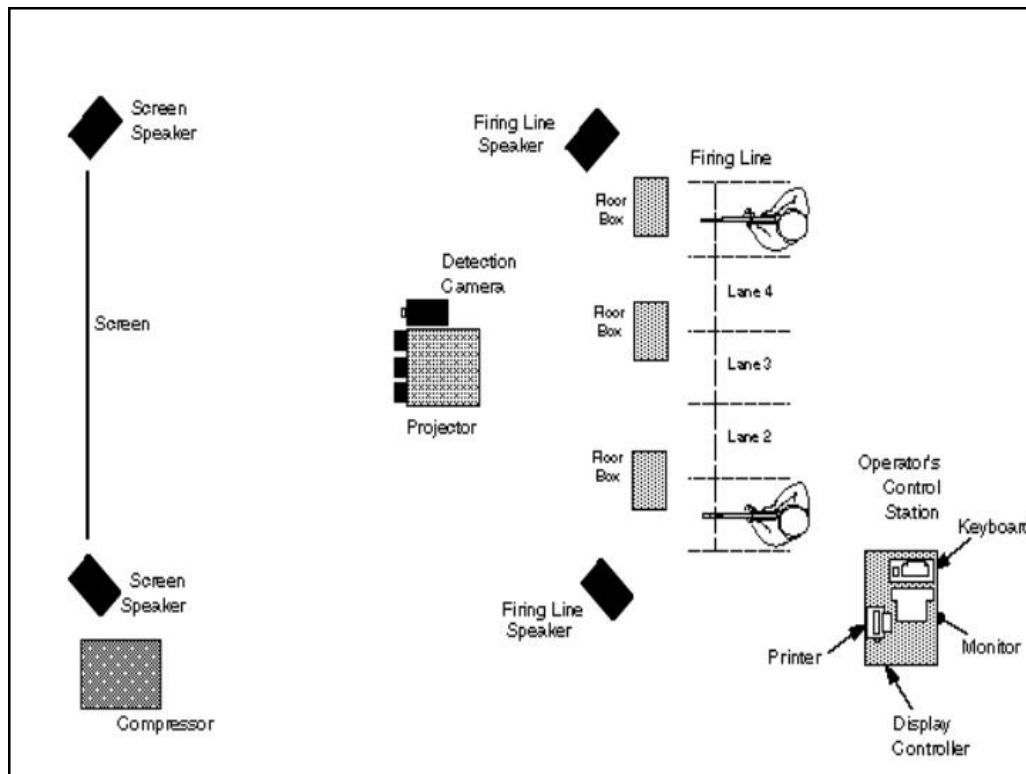
(4) The instructor watches the gunner and determines if the gunner or assistant gunner is properly doing the exercise by telling the ammunition bearer to stop and hold. He informs the gunner or assistant gunner to stand.

(5) The instructor positions himself behind the gun and looks through the sights to see where the gunner or assistant gunner was aiming. The instructor now explains the errors noted. When the instructor believes the gunner is proficient, the assistant gunner begins his exercise.

## **F-7. ENGAGEMENT SKILLS TRAINER**

The engagement skills trainer (EST) 2000 (Figure F-4, page F-6) is a home station, indoor, multipurpose, multilane, small arms simulator. The EST augments and substitutes individual, crew, and static-squad collective training. Using projected imagery and laser-light technologies, the EST 2000 provides weaponry that simulates the same physical, functional, operational characteristics, and capabilities of service weapons. Weaponry for the EST 2000 includes the M16A2 rifle, M4 carbine, M9 pistol, M249 automatic

rifle/light machine gun, M60, M240B and M2 machine guns, MK 19 grenade machine gun, M136 AT4, M1200 shotgun, and M203 grenade launcher.



**Figure F-4. EST 2000.**

a. The EST 2000 is a modular system with an operational size of 35 feet by 35 feet by 8 feet high for a 10-lane system. Training programs include standard Army courses of fire, “shoot-don’t shoot” decision training, and static-squad or element collective defensive training for infantry, scouts, engineers, military police, and CS or CSS. Basis of issue is one 15-lane EST 2,000 for each OSUT or BCT battalion supporting Initial Entry Training (IET) and one 10-lane EST 2,000 for each brigade-size element for Active and Reserve Component units for sustainment training.

b. The following tables (Tables F-1, F-2, and F-3) show the capabilities and limitations for each training program:

<b>MARKSMANSHIP TRAINING PROGRAM</b>	
209 marksmanship exercises, from zeroing through record-fire courses.	
<b>Capabilities</b>	<b>Limitations</b>
Train and sustain M16A2 rifle skills.	No qualification. No weather effects.
Train and sustain M4 carbine skills.	No qualification. No weather effects.
Train and sustain shotgun skills.	No qualification. No nonlethal munitions training.
Train and sustain M9 pistol skills.	No qualification. No weather effects.
Train and sustain light MG skills.	No maneuver training.
Train and sustain AR skills.	No maneuver training.
Train and sustain MMG skills.	No maneuver training.
Train and sustain M2 HB MG skills.	No maneuver training.
Train and sustain M203 GL skills.	No maneuver training. No nonlethal munitions.
Train and sustain MK 19 grenade MG skills.	No maneuver training.
Train antiarmor weapons employment.	No maneuver training.

**Table F-1. Marksmanship training capabilities and limitations.**

<b>COLLECTIVE TRAINING PROGRAM</b>	
178 squad tactical exercises against varying enemy targets, in terrain that varies from woodlands, desert, urban, and mountains that are typical of terrain found throughout the world.	
<b>Capabilities</b>	<b>Limitations</b>
Train and sustain defensive operations.	No offensive operations.
Train and sustain overwatch operations.	Nontactical interaction.
Train and sustain passage of lines.	Overwatch only.
Train and sustain ambush operations.	Limited eye points. Restricted interaction with on-screen CGI forces.
<b>NOTE:</b> No effects of weather and firing position distances under squad leader and fire-team leader control.	

**Table F-2. Collective training capabilities and limitations.**

<b>“SHOOT-DON'T SHOOT” TRAINING PROGRAM</b>	
40 “shoot-don't shoot” judgmental exercises.	
<b>Capabilities</b>	<b>Limitations</b>
Train and test rules of engagement.	No shoot back. No nonlethal training mode.
Train target selection under stress.	No shoot back.
Train target engagement under stress.	No shoot back.
Train verbal skills to deescalate.	No direct adversary reactions.

**Table F-3. “Shoot-don't shoot” training capabilities and limitations.**

c. The EST trains many skills, but it is not intended to replace live qualification or MILES force-on-force tactical training. Its many capabilities are clearly definable, but its limitations preclude total elimination of training ammunition resources. Training on the EST is planned to save ammunition resources, both at the assistant gunner and secondary firer positions and in peripheral training exercises such as protective mask and night-fire small-arms training. The EST 2000 enhances moving target training exercises. Sometimes shortages of range facilities or environmentally safe range resources prevent training in night, moving, and protective mask. The EST 2000 is the only three-mode training device capable of conducting realistic range operations while sustaining STRAC standards for individual weapons training, sustaining collective tactical skills and training, and sustaining judgmental engagements for the peace-keeping role of today's forces.